USSR

UDC 621.762;669.018.24(088.8)

FEDORCHENKO, I. M., SLYS', I. G., PUGINA, L. I., YERMAKOVA, YE. N.

"Cermets Antifriction Material"

Translation: The material,based on stainless steel,contains Fe, C, Cr,and S. In order to improve the supporting capacity and corrosion resistance, Ni is introduced into the material, and the components are taken in the following ratios (in %): Cr 13-32, Ni 0.5-20, S 0.55-7.0, C 0.07-0.8, and Fe for the rest.

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USSR   UDC 621.762.5

KORKH, L. M., PUGINA, L. I., PEREPELKIN, A. V., and FEDORCHENKO, I. M.,
Institute of Problems of Material Science, Academy of Sciences Ukr SSR

"Processes Occurring During Sintering of Iron-Graphite Containing Zinc
Sulfide"

Abstract: A study was made of the behavior of zinc sulfide -- one of the
basic components introduced into iron-graphite cermet materials to improve
their antifriction properties. The paper includes a study of the effect
of porosity on the variation in chemical composition of ZhGr3Tss4 materials
during sintering. The effect of temperature, isothermal holding time,
moisture of the protective environment, and its composition (argon, hydrogen)
on the intensity of weight loss of the zinc sulfide placed in the heating
zone in powdered form was also studied.

It was found that during heating in hydrogen, zinc sulfide can partially
decompose. With an increase in the hydrogen temperature and humidity the
decomposition intensity increases. During sintering of ZhGr3Tss4 in
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USSR

KORKH, L. M., et al, Poroshkovaya Metallurgiya, No 1 (97), Jan 71, pp 18-22

hydrogen, the decomposition products of the zinc sulfide interact with the
surface of the iron particles to form iron sulfide and their solid solution
in zinc sulfide. At a sintering temperature above 975°C, a liquid phase is
formed in the material — a sulfide-carbide eutectic enveloping the surface
of the iron particles — which during sintering under pressure gives the
material its fibrous structure. With a decrease in porosity, the content
of sulfur and zinc in the sintered ZhGr3Tss4 material increases. Thus, the
nonporous material contains twice as much sulfur and six times more zinc
than the material with a porosity of 20 percent.

Powder Metallurgy

USSR

YURCHENKO, A. G., SHCHERBAN', N. I., and PUGINA, L. I., Institute for Problems of Material Science, Academy of Sciences Ukrainian SSR

"Elastic Aftereffect of Iron-Graphite Pressed Parts in Cold Pressing"

Abstract: Determinations were made of the radial elastic aftereffect in the pressing of iron-graphite materials based on brand PZh2M iron powder (All-Union State Standard 9849-61) containing 3 to 30% by mass of graphite as the second component. A hydraulic press with a force of 200 tons was used in the experiments. Five or six samples of each composition were pressed under compacting pressures of from 10 to 100 kg/mm^2 in a mold with an outer die diameter of 70 mm and an inner one of 28 mm.

From the data obtained it was determined that with a rise in compacting pressure and a rise in the graphite content in the mixture, the elastic aftereffect of the material increases, but the general appearance of the relation is maintained with some decrease in the curvature of the lines. Consequently, the elastic aftereffect of two-component iron-graphite materials conforms with those regularities which are observed in the pressing of single-component materials based on iron. The data indicate that, in the process of cold pressing, the stresses in the region of contact between particles can be described by the Hertz theory, according to 1/2

USSR

YURCHENKO, A. G., et al., Poroshkovaya Metallurgiya, No 5, May 70, pp 20-22

which the approach between centers of two ideally elastic spheres is proportional
to the compressive force in the degree of 2/3.

2/2

USSR

UDC 621.785.1162-412,669.15

BRUK, YU. G., STANOVOY, V. I., GUTOVSKIY, I. B., and PUGOVKIN, A. U.

"Investigation of Heating Steel NN3B (OKh18N5G12AB) Ingots"

Moscow, Kuznechno-Shtampovochnoye Proizvodstvo, No 10, Oct 73, pp 39-40

Abstract: Steel NN3B can be greatly strengthened at 550-800° C and forged at 950-1250° C, but its deformability at higher temperatures is sharply diminished, and tests were conducted to determine the soak times and temperatures and heating rates to produce the highest forging temperature and best metal structure. Tests were made by heating at an arbitrary rate, soaking for a period, heating to a higher temperature at an arbitrary rate and soaking. The short coming of this method was that temperatures measured were furnace temperatures and not ingot temperature. Therefore, holes were drilled in test ingots for placement of thermocouples. Tests showed that at low furnace temperatures (650° C), the differences in furnace and ingot temperatures is high (200-350° C over a 7-hour period). At a furnace temperature of 1250° C this difference is only 60-80° C. When the temperature of the furnace was increased from 650-900° C the ingot temperature rise was much faster than at 650° C. Tests were also conducted for the fastest possible heating rates (400-500° C/hr) which showed that during

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BRUK, YU. G., et al., Kuznechno-Shtampovochnoye Proizvodstvo, No 10, Oc 73, pp 39-40

certain heating periods the temperature drop along ingot length was 650° C, which promoted development of numerous internal defects. The final conclusions for the heating of steel МИ3В were to soak ingots at 650° C for 4.5 hours, 900° C for eight hours with final heating to a furnace temperature of 1300° C (ingot temperatures -- 1220-1240° C). This procedure increased the number of forging operations per heating, reduced the number of heatings, and reduced the number of cracks and scrap ingots by four times. Three figures, one bibliographic reference.

2/2

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USSR

UDC 616.8-009.87:612.12.1

PUKACH, L. P., Major, Medical Corps, and YEREM'YANTS, A. M., Honored Physician, Kazakh SSR, and Colonel, Medical Corps

"The Effects of Thermal Stress on Blood Cholinesterase Activity"

Moscow, Voyenno-Meditsinskiy Zhurnal, No 4, 1973, p 64

Abstract: Blood cholinesterase activities were determined in the case of 30 males, 19-23 years of age. In the morning hours the mean body temperature was 36.1°, and cholinesterase activity was 5.63 ± 0.32 μmoles/ml·min. At a body temperature of 37.6° (38-38.3° in some cases), the enzymatic activity fell to 4.55 ± 0.2 μmoles/ml·min. Thus, an increase in the body temperature of 1.5° was accompanied by a 19.2% decrease (1.08 μmoles/ml·min) in blood cholinesterase activity. Physical exertion of a limited nature did not evoke significant changes in blood cholinesterase activity. Diurnal changes in blood cholinesterase activity may be regarded as reflecting the organisms adaptational changes.

1/1

USSR

UDC 532.516

PUKHNACHEV, V. V.

"Plane Steady-State Flow of a Viscous Incompressible Liquid With Rectilinear Free Boundaries"

V sb. Chisl. metody mekh. splosh. sredy. T. 2 (Numerical Methods of the Mechanics of a Continuous Medium. Vol. 2 — Collection of Works), Novosibirsk, 1971, pp 67-75 (from RZh-Mekhanika, No 6, Jun 72, Abstract No 6B686)

Translation: Radial flow in a plane diffuser is considered under conditions where the condition for adhesion does not hold at both limiting planes (Problem 1) or at one of them (Problem 2), and it is assumed that these planes are free. The difference from the Hamel problem is that the tangential component of the viscous stress reduces to zero at the free planes. It is shown that Problem 1 does not have solutions for $R \leq -8\pi$ and $R > 0$ and has at least one solution for $-8\pi < R \leq 0$ ($R = Q/\nu$ is the Reynolds number and Q is the flow). Problem 2 (one boundary free, the other solid) does not have solutions for $R \leq -22.65$; it has at least one solution for $R > -22.65$ and has a unique solution for $R > 1.66$. The aperture angle of the diffuser is related to the Reynolds number.

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USSR

PUKHNACHEV, V. V., Chisl. metody mekh. splosh. sredy. T. 2, Novosibirsk, 1971, pp 67-75

The asymptotic behavior of the solution of Problem 2 as $R \to +\infty$ is studied. G. Z. Gershuni.

2/2

UNCLASSIFIED

TITLE--RECIRCULATION FLAME FURNACES WITH TWO STAGE FUEL FIRING AND
    PROGRAMMED HEAT CONTROL -U-

PROCESSING DATE--11SEP70

AUTHOR--PUGOVKIN, A.U., IVANOV, YU.P., FILIPPOV, A.N.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, KUZNECHNO-SHTAMPOVOCHNOYE PROIZVODSTVO, NO 2, 1970, PP
    30-33

DATE PUBLISHED-------70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--METAL INGOT, METAL HEAT TREATMENT, AUTOMATIC CONTROL SYSTEM,
    METALLURGIC FURNACE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1985/0312

STEP NO--UR/0182/70/000/002/0030/0033

CIRC ACCESSION NO--AP0100800

UNCLASSIFIED

CIRC ACCESSION NO--AP0100800   UNCLASSIFIED   PROCESSING DATE--11SEP70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BECAUSE EXISTING SYSTEMS OF FLAME
FURNACES DO NOT PROVIDE THE REQUIRED ACCURACY AND STABILITY OF HEATING
OF METAL INGOTS, METHODS OF CONTROL HAVE BEEN DEVELOPED FOR MAINTAINING
A SPECIFIED TEMPERATURE, USUALLY EQUAL TO THE FINAL TEMPERATURE OF THE
HEATED METAL, AT ONLY THOSE PARTS OF THE OPERATING CHAMBER IN WHICH THE
HEATING IS MOST INTENSE. THEN , THE CONTROL OF THE PROCESS REDUCES TO
RAISING THE TEMPERATURE OF THE REMAINING PARTS OF THE OVEN TO THE GIVEN
TEMPERATURE. THIS ARTICLE EXPLAINS SUCH A SYSTEM. PRELIMINARY
CALCULATIONS CONDUCTED BY THE AUTHORS INDICATE THAT, OTHER CONDITIONS
BEING EQUAL, THE DROP IN TEMPERATURE IN THE OPERATING SPACE OF THE OVEN
MAY VARY AS A FUNCTION OF THE SUPPLY OF THE HEATING MEDIUM AND OF THE
ORGANIZATION OF THE GAS FLOW INSIDE THE SPACE. THE SYSTEM INCLUDES THE
FOLLOWING: AUTOMATIC PROGRAMMED CONTROL AND TEMPERATURE REGULATION IN
THE OVEN'S OPERATING SPACE; AUTOMATIC CONTROL AND REGULATION OF THE GAS
PRESSURES IN THE OPERATING SPACE; AUTOMATIC CONTROL AND REGULATION OF
THE AIR PRESSURE FOR GAS RECIRCULATION; CONTROL OF FUEL EXPENDITURE;
CONTROL OF RAREFACTION IN THE HORIZONTAL FLUE; GAS SHUTOFF WHEN THE
PRESSURE OF GAS OR AIR FALLS IN RECIRCULATION. A CROSS SECTIONAL
DRAWING OF THE FURNACE AND THE ELECTRICAL CIRCUIT FOR AUTOMATIC CONTROL
PROGRAMMING ARE SUPPLIED WITH THE TEXT. RESULTS OF RESEARCH MADE ON
RECIRCULATION OVENS WITH REMOVABLE HEARTH FOR HEATING INGOTS BEFORE
PRESSING ARE ALSO PROVIDED.

UNCLASSIFIED

USSR

UDC: 621.396.69:621.319.4

DUKMASOV, V. B., YEKIMOV, V. V., KUZ'MIN, G. M., PUGOVKIN, P. R.

"An Electromagnetic Powder Clutch as a Braking Element in Capacitor Winding Lathes"

Translation: The authors discuss solution of the problem of maintaining constant tension on ribbons when winding sections of radio capacitors by using an electromechanical braking element -- a powder electromagnetic clutch of original design. A basis is given for selection of this type of braking element. A description is given of the design and materials on testing an experimental model of the clutch. Recommendations are given on its use. Resumé.

1/1

USSR   UDC: 517.9:532/534

PUGOVTSOV, B. A.

"On the Motion of Vortex Ring Turbulence and Transfer of a Passive Impurity
by a Vortex Ring"

V sb. Nekotor. probl. mat. i mekh. (Some Problems of Mathematics and Mechan-
ics—collection of works), Leningrad, "Nauka", 1970, pp 182-189 (from RZh-
-Matematika, No 5, May 71, Abstract No 5B475)

Translation: A system of equations is proposed to describe the motion of
a turbulent vortex ring and transfer of a passive impurity by this vortex
ring in a homogeneous viscous incompressible fluid. A problem with a special
type of initial conditions is formulated for this system of equations. This
problem is self-similar. The self-similarity determines the law of motion
of the vortex ring and the change in its dimensions. A comparison of the
self-similar law of motion and the change in dimensions of the vortex ring
agrees well with experimental results. Author's resumé.

1/1

1/2   026   UNCLASSIFIED
TITLE--USE OF A NEW LUBRICATING ADDITIVE FOR DRILLING MUDS DURING DIAMOND   PROCESSING DATE--23OCT70
   DRILLING OF GEOLOGICAL BOREHOLES -U-
AUTHOR-(05)-ZAYONTS, O.L., KOMAR, V.YA., PUKAS, A.I., YAROV, A.N., KENDIS,
   M.SH.
COUNTRY OF INFO--USSR

SOURCE--RAZVED. OKHR. NEDR 1970, 36(3), 37-40

DATE PUBLISHED-------70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, EARTH SCIENCES AND
   OCEANOGRAPHY, MATERIALS
TOPIC TAGS--LUBRICANT ADDITIVE, VEGETABLE OIL, LUBRICATING OIL, DRILLING
   MUD, DIAMOND, GEOLOGY, DRILLING MACHINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/2068
                              STEP NO--UR/9083/70/036/003/0037/0040
CIRC ACCESSION NO--AP0127441
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0127441   UNCLASSIFIED   PROCESSING DATE--23OCT70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TARS FROM SOAPSTOCKS OF BLACK
   COTTONSEED OIL AND TECH. FATS (ACID NO. 130-200 MG KOH. MOL. WT.
   475-522, D. 0.872) WERE USED IN AMTS. OF 2PERCENT AS LUBRICATING
   ADDITIVES TO MUDS DURING DIAMOND DRILLING. THE RESULT WAS SIMILIAR TO
   50PERCENT DECREASE IN SURFACE TENSION OF MUDS, SIMILIAR TO
   100-200PERCENT INCREASE IN DRILLING RATE, AND SIMILIAR TO 35PERCENT
   REDN. OF WEAR OF DIAMOND CROWNS.   FACILITY: TREST,
   KIEVGEOLOGIYA, KIEV, USSR.

UNCLASSIFIED

USSR

FUKAS, A.P., FUKAS, I.P. (Kaunas Radio Plant)

UDC 621.355.4:621.375.029.52

"Transformerless Tube Push-Pull Low-Frequency Amplifier"

Translation: A transformerless tube push-pull low-frequency amplifier is proposed, which contains a power supply and a phase inverter. The amplifier differs in the fact that, with the object of an increase of economy, one of the radio tubes of the output stage is connected by the plate between a rectifier bridge and the resistors of the power-supply filter, the other output of which is directly connected across the primary winding of a supplementary audio-frequency transformer with the screen grid of this same tube, and with loud-speakers (preferably high-impedance) across series-connected electrolytic capacitors, between which is connected the cathode of the above-mentioned radio-tube and the plate of the other tube of the output stage. In the process the control grid of the first of the tubes is connected to the cathode of the tube of the phase inverter, and the second to the similar electrode of the latter.

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USSR   UDC 621.355.4:621.375.029.52

FUKAS, A.P., FUKAS, I.P. (Kaunas Radio Plant)

"Transformerless Tube Push-Pull Low-Frequency Amplifier"

USSR Author's Certificate No 307488, filed 21 July 69, published 4 Aug 71
(from RZh:Radiotekhnika, No 2, Feb 72, Abstract No 2D113P)

Translation: A transformerless tube push-pull low-frequency amplifier is
proposed, which contains a power supply and a phase inverter. The amplifier
differs in the fact that, with the object of an increase of economy, one of
the radio tubes of the output stage is connected by the plate between a rect-
fier bridge and the resistors of the power-supply filter, the other output of
which is directly connected across the primary winding of a supplementary audio-
frequency transformer with the screen grid of this same tube, and with loud-
speakers (preferably high-impedance) across series-connected electrolytic
capacitors, between which is connected the cathode of the above-mentioned radio-
tube and the plate of the other tube of the output stage. In the process the
control grid of the first of the tubes is connected to the cathode of the tube
of the phase inverter, and the second to the similar electrode of the latter.

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USSR

UDC 546.289'21:539.238

SAKHAROV, YU. G., KOROSTELEV, V. F., KUZNETSOV. L. I., CHERNOBROVKIN,
D. I., and PUKHA, P. N., Omsk Polytecnical Institute

"Electron Microscope Study of the Structure of GeO Films"

Abstract: The article considers the effect of specific process re-
gimes on the existence of the amorphous and crystalline states of GeO
films, as well as structural changes in GeO as a result of temperature
and elevated humidity. An EM-7 electron microscope was used to study
the structure of the GeO films. The films were deposited on sub-
strates of sital ST 50-1 at 100 and 200° C. Deposition rate was 5-50 Å/
sec. Crystalline inclusions of GeO are observed in the initial depo-
sition stages. Films deposited on different substrates under the
same conditions can have different inclusion sizes and shapes, while
films deposited on the same substrate under different conditions dis-

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USSR

SAKHAROV, YU. G., et al., Izvestiya Akademii Nauk SSSR -- Neorgani-cheskiye Materialy, Vol 6, No 10, Oct 70, pp 1821-1823

play the same structure. Two forms of crystalline formations are found, viz. flat tablets and needles. An increase in film thickness intensifies the effect of substrate temperature and deposition rate. Films 1-2 microns thick display the crystal phase at deposition rates of ~ 5 Å/sec, but have an amorphous structure at rates above 20 Å/sec. The size of the crystal formations increases at a substrate tempera-ture of 200° C. Vacuum annealing at 450° C results in the transition of GeO from the amorphous to the crystal phase. The amorphous phase is stable below 350° C. GeO undergoes structural changes in a humid atmosphere.

2/2

Acc. Nr:

AP0045522

89521c Effect of the unshared pair of nitrogen atom electrons on the photochemical properties of radicals in irradiated amines. Kotov, A. G.; Pukhal'skaya, G. V.; Pshezhetskii, S. Ya. (Fiz.-Khim. Inst. im. Karpova, Moscow, USSR). *Khim. Vys. Energ.* 1970, 4(1), 93-5 (Russ). ESR spectra of radicals formed by irradn. of some alkylamine hydrochlorides are described. The radicals formed from MeNH$_2$.HCl are decompd. by uv light. Photochem. stable ion radicals ·CH$_2$NH$_2$$^+$Me (I), Me$_2NH^+CH_2$· (II), ·CH$_2CH_2NH_3$$^+$ (III), and ·CH$_2$CH$_2$NH$_2$$^+$Et (IV) are formed from corresponding amine hydrochlorides. By irradn. of Me$_2$NHHCl and Me$_2$NHCl ion radicals ·CH$_2$NH$_3$$^+$ are formed. No diminution of the ESR signal is obsd. when samples contg. I, II, III, and IV are irradiated by uv light of wavelength >260 nm. The absorption region of these ion radicals is <260 nm, whereas corresponding radicals which possess the unshared electron pair on N absorb light below 450 nm.

J. Sedlar

REEL/FRAME

19780490

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USSR

VLASENKO, N.A., ZYN'C, S.A., PUKHLIY, CH. A.

"Change Of Color Of The Glow Of Film Electroluminescent Devices With Use Of Inter-
ference Radiation"

Poluprovod. tekhn. i mikroelektronika. Resp. mezhved. sb. (Semiconductor Technology
And Microelectronics. Republic Interdepartmental Collection), 1970, No 4, pp 33-38
(from RZh--Elektronika i yeye primeneniye, No 8, August 1970, Abstract No 8B251)

Translation: A new method is proposed for change of the color of the glow of film
electroluminescent devices, which is based on the use of interference radiation.
The method is tested on elements [yacheyka] on the base of a ZnS.Mn film with high-
ly reflecting metal electrodes (of Au, Al). In such elements it is possible to ob-
tain different colors from the green ($\lambda_{max} = 555$ nm) to the red ($\lambda_{max} = 645$ nm)
by a change of the luminophor thickness. A change of the angle of observation
(above 30°) causes an analogous effect. During this the luminance level of the
electroluminescence is sufficient for practical use of the effect. A method is pro-
posed to make it possible to obtain multicolor electroluminescent devices (mnemo
circuits, character indicators, and others) on one substrate with the aid of a
single technological process. 5 ill. 1 tab. 4 ref. Summary.

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1/2   030
UNCLASSIFIED
TITLE--EVALUATING THE KINETICS OF VULCANIZING RUBBER MIXTURES ACCORDING TO
A DYNAMIC MODULUS UNDER VARIABLE TEMPERATURE CONDITIONS -U-
PROCESSING DATE--30OCT70

AUTHOR-(05)-NECHIPORENKO, A.G., LUKOMSKAYA, A.I., MILKOVA, YE.M., PUKHOV,
A.P., SHMIGELSKIY, V.K.

COUNTRY OF INFO--USSR

SOURCE--KAUCH. REZINA 1970, 29(3), 17-19

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--SHEAR STRESS, VULCANIZATION, ELASTIC MODULUS, RUBBER WORKING
MACHINERY, AUTOMATIC CHEMICAL PROCESS CONTROL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/0529

STEP NO--UR/0138/70/029/003/0017/0019

CIRC ACCESSION NO--AP0119448

UNCLASSIFIED

CIRC ACCESSION NO--AP0119448   UNCLASSIFIED   PROCESSING DATE--30OCT70
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   AN APP. WAS DESIGNED WHICH
AUTOMATICALLY RECORDS THE AMPLITUDE OF THE DYNAMIC SHEAR STRESS APPLIED
TO A RUBBER SAMPLE BEING VULCANIZED AT CONSTANTLY INCREASING
(PROGRAMMED) TEMP.   THE READINGS ARE PROPORTIONAL TO THE CHANGING
DYNAMIC ELASTICITY MODULUS OF THE SAMPLE AND PERMIT DETN. OF THE OPTIMUM
VULCANIZATION TIME POSSIBLE IN A GIVEN TEMP. REGIME.
DNEPROPETROVSK. SHINNYI ZAVOD., DNEPROPETROVSK, USSR.   FACILITY:

UNCLASSIFIED

USSR

UDC: 002.513.5:681.3.074

PUKHOV, A. S., Engineer

"Information Retrieval Systems in Equipment Design"

Moscow, Mekhanizatsiya i Avtomatizatsiya Proizvodstva, No 4, 1973, pp 43-46

Abstract: The author asserts that an information retrieval system based on the use of computer and management techniques is required for the ordered organization of production processes and that the first step in systematizing technical equipment is the formation of such a system. The development of the system comprises two stages: first, the establishment of an information retrieval language for the system; and second, the choice of the means and methods for realizing the basis of the system's operation. An analysis is made of the design of the information retrieval system set up by the Kurgan Technical Design Bureau, in which the language is based on the principle of the hierarchical classification of objects, and on a descriptive principle permitting generalization of the equipment to be constructed; the latter is based on a compilation of the symbols representing those objects and on the consideration of the many factors affecting the construction. Special coding tables for the formulation of key words are given, plus a table of retrieval data. Some details of the industrial testing of the system are also presented.
1/1

USSR

UDC 681.325.5

PUKHOV, G. YE., Academician of the Academy of Sciences Ukrainian SSR, and
YEVDOKIMOV, V. F., Institute of Electrodynamics, Academy of Sciences Ukrain-
ian SSR, Kiev

"The Use of Digital Nonalgorithmic Machines for the Modeling of Differential
Equations"

Abstract: The article considers one of the possible uses of digital nonal-
gorithmic machines for solving systems of differential equations which
as matrices have the form

$$\frac{dX}{dt} + A(X)X = F. \qquad (1)$$

Descriptions are given of a device for obtaining the sum of the paired prod-
ucts

1/3

USSR

$$y = a_1 x_1 + a_2 x_2 + \ldots + a_i x_i + \ldots + a_n x_n \tag{2}$$

and a device for solving a system of three equations of form (1), whose construction follows the pattern of a matrix analog model designed to solve the same equations.

The technique of solving differential equations by means of digital nonalgorithmic machines is rather general, since any system of differential equations, as well as individual high-order equations, reduces to form (1). Sometimes, however, particularly in the modeling of automatic control systems, the need arises for the so-called structural realization of systems of differential equations. In this case it is necessary to have a set of decision elements for the digital nonalgorithmic machines realizing the individual operations and to interconnect them according to the structure of

2/3

- 2 -

USSR

the modeling system. The process of preparing problems for solution on the
digital nonalgorithmic machines is the same as in analog computer technology.
The use of the digital nonalgorithmic machines to solve differential equations
substantially expands the frequency range of obtainable results as compared
to existing digital computers and increases precision as compared to analog
computers.

3/3

USSR

PUKHOV, G. Ye., Academician of the Ukrainian Academy of Sciences, and YEVDOKIMOV, V. F.

"A Possible Principle in the Construction of Digital Computers"

Abstract: The accuracy and speed of digital computers are roughly proportional to the volume of the equipment required for the computations; in analog computers. the accuracy is limited by the potentials of the computing elements and the speed is practically independent of the volume of equipment. This paper investigates the possibilities of constructing machines in which the equipment volume is independent of the speed but increases with increasing accuracy as in digital devices. There is thus the possibility of developing machines with the accuracy of digital and the speed of analog computers, which situation is considered a practical impossibility in computer practice. It can be attained by using the nonalgorithmic principle, widely used in analog machines, in digital equipment. The authors refer to machines using this principle as digital non-algorithmic machines, and they indicate three possible directions in which they may develop.

1/1

USSR

PUKHOV, G. YE., KHATIASHVILI, TS. S., Order of Lenin Institute of Cybernetics, Academy of Sciences UkrSSR

"Local Mathematical Models of Control Systems"

Abstract: It is noted that the development of computer techniques, on the one hand, and methods of applied mechanics, on the other, have made it possible not only to consider as objects of automatic control a class of technological problems with known mathematical descriptions but also to construct automatic control systems for objects the mathematical description of the physical pro- cesses of which are either unknown or too complex for their direct use. This book attempts to present certain particular methods for constructing models of objects with incomplete information. Particular attention is given to constructing local mathematical models for self-adjusting control systems. This book consists of seven chapters, each of which in their content is a separate part of the study of various problems of the modeling of objects and may therefore be considered independently.

1/3

USSR

PUKHOV, G. YE., KHATIASHVILI, TS. S., Lokal'nyye matematicheskiye modeli system upravleniya, 200 pp, price 1 rub, 15 kop, sent to press 21 May 1971

The first chapter gives a general formulation of the control problem for objects with incomplete information. Existing definitions of the notions of control, criterion, and object are given.

The second chapter gives a conventional classification of models. So that the reader with little acquaintance with the modeling of objects need not frequently use other material, this chapter is as elementary as possible and presents known material on the description of physical, mathematically determined, and statistical models.

The third chapter is the basic chapter of the book. This chapter gives a general form for the criterion for the approximation of a function, and from this criterion one obtains as a particular case a criterion for the interpolation and approximation of a random function (the Gauss criterion), probably very familiar to the reader, and also the criterion for interpolation of a random function. A detailed description of the computer apparatus for using each of these criteria emphasizes the identical nature of the algorithm for computations and for finite control systems to determine the parameters of a model, which as a rule are linear systems of algebraic equations.

2/3

USSR

PUKHOV, G. YE., KHATIASHVILI, TS. S., Lokal'nyye matematicheskiye modeli system upravleniya, 200 pp, price 1 rub, 15 kop, sent to press 21 May 1971

The fourth chapter discusses principles of constructing control systems on the basis of the inverse Jacobian method for objects with incomplete information, which involves the construction of linear local models in the form of a linear Taylor equation, and by determining the partial derivatives of functions on the basis of data with random disturbances. A practical technique is given for determining the local model of the object.

The fifth chapter concerns the construction of control algorithms on the basis of the inverse Jacobian method for objects with a random vector function and for objects with random arguments. This chapter gives various electrical computational circuits for achieving these algorithms.

The sixth chapter presents studies on the construction of local models of different industrial processes.

The seventh chapter concerns the application of the studies to the construction of local, determined mathematical models for a recognition problem.

The book is intended for those interested in problems of automatic control and computer technology and can be useful to students and graduate students of these disciplines and also to engineers in related fields.

3/3

USSR

PUKHOV, G. Ye., Academician of the Academy of Sciences of the UkrSSR,
MAYERGOYZ, I. D., KATKOV, A. F., and GUMENYUK-SYCHEVSKIY, V. I., Institute
of Cybernetics, Academy of Sciences of the UkrSSR, Kiev

"On the Theory of One Class of Devices for Computer Input of Graphic Data"

Abstract: This paper deals with a class of devices for automatic input
of graphic information into a computer. Using conductive sheets of films,
the devices considered operate on the basis of modeling distributions with
a structure which is known and is as simple as possible. The only known
representative of this class is a device which utilizes a square conduc-
tive sheet in which time-alternating electric fields are set up in two
mutually perpendicular directions parallel to the sides of the square.
A pen (pencil) is used for time-sequential measurements of the voltage,
approximately proportional to the x and y coordinates, which are sent
through an analog-code converter to the computer and to a display. A
broader principle is introduced for improving this type of device. In
essence, this generalized principle is as follows. Two potential distri-
butions alternating in time and described by the equations
1/2

USSR

PUKHOV, G. Ye., et al., DAN SSSR, Vol 200, No 1, Sep 71, pp 53-55

$$U = \varphi_1(x, y), \quad U = \varphi_2(x, y)$$

are set up in the conducting plate. The voltages U_1 and U_2 measured by the pen on each cycle isolate equipotential lines to which the contact point of the pen belongs on each cycle. The equations of these lines take the form

$$U_1 = \varphi_1(x, y); \quad U_2 = \varphi_2(x, y).$$

Solving this system, we find the coordinates of the point of contact of the pen as the coordinates of the point of intersection of the equipotentials. Two realizations of this generalized approach are presented. Two figures, bibliography of nine titles.

2/2

- 22 -

USSR

PUKHOV, G. Ye., KHATIASHVILI, Ts. S.

UDC: 7.84

"Localized Mathematical Models of Control Systems"

Lokal'nyye Matematicheskiye modeli sistem upravleniya (cf. English above), Kiev, "Nauk. dumka", 1971, 200 pp, ill. 1 r. 15 k. (from RZh-Kibernetika, No 1, Jan 72, Abstract No 1V1116 K)

Translation: Some special methods are outlined for constructing models of objects with incomplete information. Particular attention is given to construction of localized mathematical models for adaptive control systems. A general criterion for an approximate function is given which yields criteria for interpolation and approximation of random functions as special cases.

1/1

USSR

PUKHOV, G. Ye., Academician of the Academy of Sciences Ukrainian SSR

"Quasi Analogies and Hybrid Computer Technology"

Kiev, Visnyk Akademii Nauk Ukrains'koi RSR, No. 1, Jan 71, pp 11-21

Abstract: Analog computers (simulators, models) constructed on the basis of direct analogies realize the similarity principle; those based on quasi analogies realize the equivalence principle. Quasianalog simulators are divided into uncontrolled and controlled devices. Analog computers are usually divided into at least two large groups: 1) modeling circuits universal for a given class of objects; 2) modeling circuits which require the formulation of equations only for individual parts of an object and equations for the relation between them. The first type of analog computer uses primarily a form of information representa-

1/4

USSR

PUKHOV, G. Ye., Visnyk Akademii Nauk Ukrains'koi RSR, No. 1, Jan 71, pp 11-21

tion which characterizes the solution and parameters of mathe-
matical equations. A discrete form of information representa-
tion is also used. An example of this type is the digital
analogs developed at the Institute of Cybernetics, Academy of
Sciences Ukrainian SSR, based on counter structures. A special-
purpose ASOR-2 (automated system of work organization) digital/
analog mathematical machine has been created for the calculation
of network schedules.

There are several levels of hybridization:

1. Hybrid computers which consist of a combination of
analog machines with different forms of quantity representation
or combine at the same time analog and digital computers.

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USSR

PUKHOV, G. Ye., Visnyk Akademii Nauk Ukrains'koi RSR, No. 1, Jan 71, pp 11-21

2. Hybrid computers which consist of analog blocks with different forms of quantity representation or analog and digital blocks simultaneously.

3. Hybrid computers whose individual blocks combine both analog and digital principles of construction.

The first type is most prevalent both in the USSR and abroad. Quasianalog hybrid computer systems are the structural realization of a device based on the method of quasi analogies and various principles of traditional computer construction. Several quasianalog computers have already been created: a computer for the calculation of engineering networks, the "ARKUS" computer, a variable-structure hybrid integrator. The "ARKUS" is a special-purpose computer for solving boundary-

3/4

USSR

PUKHOV, G. Ye., Visnyk Akademii Nauk Ukrains'koi RSR, No. 1, Jan 71, pp 11-21

value problems for ordinary differential equations. An example
of a variable-structure hybrid integrator is the so-called gamma-
analog network for the modeling of the biharmonic equation.
There are wide prospects for hybrid computers in connection with
the development of "third generation" computer technology.

4/4

PUKHOV, G. Ye., GALUZINSKIY, G. P., ROMANTSOV, V. P., Institute of Cyber-netics, Academy of Sciences of the Ukrainian SSR

UDC: 681.332.6

"A Device for Solving Differential Equations With Boundary Conditions"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 25, Soviet Patent No 278241, class 42, filed 12 May 69, published 5 Aug 70, p 138

Translation: This Author's Certificate introduces a device for solving differential equations with boundary conditions. The unit contains a reversible point analog based on integrators and an adder. Connected to the inputs of the analog are modules for simulating the boundary conditions and the vector of the right-hand members of the equations to be solved. As a distinguishing feature of the patent, accuracy is improved by in-cluding a differential analyzer and a boundary-condition converter in the device. The differential analyzer and converter are connected in series in the circuit between the outputs and inputs of the reversible point analog to the modules for simulating the vector of the right-hand members and boundary conditions respectively.

1/1

USSR   UDC: 681.332.6

PUKHOV, G. Ye., GALUZINSKIY, G. P., KATKOV, A. F., ROMANTSOV, V. P., Insti-
tute of Cybernetics, Academy of Sciences of the Ukrainian SSR

"An Analog with Automatic Data Input for Solving Systems of Differential
Equations"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki,
1970, No 25, Soviet Patent No 278239, class 42, filed 12 May 69, published
5 Aug 70, p 137

Translation: This Author's Certificate introduces an analog with automatic
data input for solving systems of differential equations. The device con-
tains interconnected integrating capacitors, digital controlled resistors,
an amplifier for generating null-potential points, controlled switches, and
a digital automaton. As a distinguishing feature of the patent, the required
number of digital controlled resistors is reduced by including prediction
devices in the analog which are connected through the switches to the out-
puts of the amplifier for generating null-potential points. The outputs
of the prediction devices are connected to the resistors controlled from
the digital automaton and to the integrating capacitors, which are connected
through two-position switches to the amplifier input and to a zero-potential
line.
1/1

- 29 -

UDC: 621.374.32

USSR

VASIL'YEV, V. V., KMET', A. B., PUKHOV, G. Ye., RAKOV, M. A., Physicomechani-cal Institute of the Academy of Sciences of the Ukrainian SSR

"A Decade Counter With Variable Scaling Factor"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 10, Apr 71, Author's Certificate No 298074, Division H, filed 23 Sep 69, published 11 Mar 71, pp 193-194

Translation: This Author's Certificate introduces a decade counter with variable scaling factor. The counter contains an input device, memory cell, single-digit counters, and also AND logic elements. As a distinguishing feature of the patent, the unit is designed for obtaining an arbitrary con-trollable scaling factor. The outputs of the memory cell are connected respectively to the master inputs of all single-digit counters and to the inputs of all AND logic elements for all digital places except the last. The inputs of the AND element for the last digital place are connected to the outputs of all single-digit counters, and the output of this AND element is connected to the reset terminals of the single-digit counters.

1/1   - 74 -

USSR

PUKHOV, G. Ye., GALUZINSKIY, G. P., KATKOV, A. F., BAKUMENKO, V. D., Institute of Cybernetics, Academy of Sciences of the UkrSSR

"Reversible Models for Solving Systems of Algebraic Equations"

Translation: Reversible models for solving systems of algebraic equations are known which contain operational amplifiers whose inputs and outputs are connected through main and auxiliary conductance matrices to the outer terminals of the model. The conventional devices have low-level working voltages. As a distinguishing feature of the proposed device, it contains controllable current sources with a positive amplification factor whose outputs are connected to the outside terminals and to the lines for the main and auxiliary conductance matrices which correspond to these terminals, and the controlling inputs of these current sources are connected through the auxiliary conductance matrix to the inputs of the operational amplifiers. This increases the working voltage level.

1/1

1/2   029   UNCLASSIFIED   PROCESSING DATE--18SEP70
TITLE--MAGNETIC CRYSTALLOGRAPHIC ANISOTROPY OF SINGLE CRYSTALS OF LITHIUM
   AND LITHIUM ZINC FERRITES WITH TRACE COBALT DOPANTS -U-
AUTHOR-(04)-SELEZNEV, V.N., PUKHOV, I.K., DRONIN, A.I., SHAPOVALOV, V.A.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(3), 885-91

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, PHYSICS, CHEMISTRY

TOPIC TAGS--SINGLE CRYSTAL, LITHIUM, IRON OXIDE, COBALT, ZINC FERRITE,
   MAGNETIC PROPERTY, CRYSTAL LATTICE STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/0581   STEP NO--UR/0181/70/012/003/0885/0891

CIRC ACCESSION NO--AP0105564
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0105564
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE 1ST K SUB1 AND 2ND K SUB2
MAGNETIC ANISOTROPY CONSTS. WERE MEASURED FOR ANNEALED AND TEMPERED
SINGLE CRYSTAL FERRITES, LI SUBOTIMES5 NEGATIVE(X-2) FE SUB2TIMES5
NEGATIVE(X-2) CO SUBX O SUB4 (O SMALLER THAN OR EQUAL TO X SMALLER THAN
OR EQUAL TO 0.005) AND LI SUBOTIMES39 NEGATIVE(X-2) FE SUB2TIMES39
NEGATIVE(X-2) ZN SUBOTIMES22 CO SUBX O SUB4 (X EQUALS 0,0.005), AT
4.2-600DEGREES K. MEASUREMENTS WERE CARRIED OUT BY THE METHOD OF
FERROMAGNETIC RESONANCE AT SIMILAR TO 9500 AND SIMILAR TO 36,700 MHZ.
WITH INCREASED CONTENT OF CO, THE CONTRIBUTIONS TO K SUB1 MAGNITUDE OF
DELTA K SUB1 AND K SUB2 MAGNITUDE OF DELTA K SUB2 INCREASE LINEARLY. ON
TEMPERING OF LI-CO FERRITES, MAGNITUDE OF DELTA K SUB1 AND MAGNITUDE OF
DELTA K SUB2 DECREASE 3 FOLD. TEMPERING OF LI-ZN-CO FERRITES AFFECTS
ONLY LITTLE THE CONTRIBUTION OF CO TO THE ANISOTROPY CONSTS. THE ORDER
DISORDER TRANSITION IN LI FERRITE STRONGLY AFFECTS THE CONTRIBUTION OF
CO IONS TO K SUB1 AND K SUB2. AT GREATER THAN 60DEGREES, EXPTL. OBSD.
TEMP. DEPENDENCES OF DELTA K SUB1 AND DELTA K SUB2 IN THE ORDERED
CRYSTALS CAN BE SATISFACTORILY DESCRIBED BY THE THEORY OF TACHIKI;
HOWEVER, AT 4.2DEGREES K, EXPTL. AND THEORETICAL DATA DIFFER
CONSIDERABLY. POSSIBLE CAUSES ARE DISCUSSED.

UNCLASSIFIED   PROCESSING DATE--13NOV70

TITLE--INFRARED SPECTROSCOPY OF PHOSPHOLIPIDS IN ANIMAL TISSUES DURING
   MALIGNANT GROWTH -U-

AUTHOR-(04)-TAFELSHTEYN, E.E., PUKHOV, V.A., KOZLOV, YU.P., VLADIMIROV,
   YU.A.

COUNTRY OF INFO--USSR

SOURCE--BIOL. NAUKI 1970, (2), 47-52

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SARCOMA, PHOSPHOLIPID, IR SPECTRUM, AMIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/0622   STEP NO--UR/0325/70/000/002/0047/0052

CIRC ACCESSION NO--AP0117848
                         UNCLASSIFIED

2/2   018
CIRC ACCESSION NO--AP0117848
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PHOSPHOLIPIDS EXTD. FROM RAT
SARCOMA SHOWED A DOUBLING OF THE 1550 CM PRIME NEGATIVE1 IR PEAK HEIGHT
AS THE TUMOR REACHED MAX. GROWTH, AFTER WHICH THE PEAK RETURNED ALMOST
TO ITS ORIGINAL HEIGHT. PHOSPHOLIPIDS FROM THE LIVER OF THE SAME RATS
SHOWED A CORRESPONDING MIN. AT THE SAME STAGE OF TUMOR GROWTH.
APPARENTLY AMIDES AND IMIDES ACCUMULATE IN THE SARCOMA PHOSPHOLIPIDS
DURING MALIGNANT GRWOTH.   FACILITY: MOSK. GOS. UNIV. IM.
LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR   UDC: 621.391.8:519.27

PUKHOV, V. Y.

"On Calculating the Spectra of Fluctuations in Pulse Signals"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology.
Scientific and Technical Collection. SHF Electronics), 1970, vyp. No 10,
pp 43-49 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1A89)

Translation: Expressions are found for calculating the spectra of fluc-
tuations in the amplitude of pulse signals in cases where these signals
can be represented as the result of pulse modulation of corresponding con-
tinuous signals. The spectrum of fluctuations in the amplitude of the
pulse signal is expressed in terms of the corresponding spectrum of the
continuous signal and modulation parameters (pulse repetition period, shape
and duration). Fluctuation spectra are calculated for a signal from a
G4-10A klystron oscillator with signal modulation by a square pulse of
3 μs duration and a prf of 4 kHz, and 14 ms duration at a prf of 36 Hz
("meander"). The results of experimental verification of the computational
data are given. The given relationships and computational procedure may be
used in studying the spectra of fluctuations in pulse signals, and in par-
ticular the signals of SHF electronic vacuum pulse devices. Résumé.
1/1

PuKHoV Yu.G.

JPRS 59208

G-73

VII-6. GROWTH OF EPITAXIAL LAYERS OF GALLIUM ARSENIDE FOR THE MANUFACTURE OF GUNN DIODES

The basic requirements on gallium arsenide layers used to manufacture Gunn effect devices are formulated. The layers are grown by the gas transport in the Ga-AsCl$_3$-H$_2$ system. From analysis of the basic stages of growth of the layers in this process and the experimental results, the conclusion is drawn that the reproducibility of the parameters of the layers arises primarily from the quality of treating the surface of the substrates and the processes in the source zone.

A study was made of various versions of etching the substrates in the gas phase, and the regime was selected which permits the surface to be obtained with class 14 finish after gas etching. A detailed analysis was made of the processes in the source zone, and the maturation time of the source was calculated on the basis of the proposed model of the formation of a thin layer of gallium arsenide on the source. A study was made of the characteristic features of obtaining the n-n$^+$ epitaxial structures. Epitaxial layers were obtained with n = 10^{14} to 10^{15} cm^{-3} and a mobility of μ = 30,000 cm^2/vsec at 77° K not containing unevennesses greater than 0.3 microns in an area of 1 cm^2.

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PUKHOV, Yu. G.

SIPRS 63903
6-73

XIII-9. STUDY OF THE PROPERTIES AND CONDITIONS OF GROWTH OF EPITAXIAL LAYERS
OF GALLIUM ARSENIDE FROM SOLUTION IN A GALLIUM MELT

[Article by J. Ye. Maronchuk, G. S. Pesotskiy, Yu. G. Pukhov, B. L. Sushko,
A. M. Tygayev; Sverdlovsk, Novosibirsk, III Simpozium po Protsessam Rosta i
Sinteza Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June 1972,
p 191]

The epitaxial layers of gallium arsenide were grown from a solution in
a gallium melt in a vertical reactor. The gallium melt placed in a container
of carbon glass was saturated by arsenic by decomposition of AsCl₃. A study
was made of the effect of the growth temperature, the cooling rate, the melt
volume and the orientation plane of the substrates on the morphology, the growth
rate and the electrical characteristics of the epitaxial layers. The sources
of uncontrolled admixture were analyzed for growth of the gallium arsenide lay-
ers.

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USSR

UDC: 51

PUKHOVA, G. V.

"Graphs for Shipping out Finished Goods"

Tr. 4-y Zimn. shkoly po mat. programmir. i smezh. voprosam, 1971, vyp. 2 (Works of the Fourth Winter School on Mathematical Programming and Related Problems, 1971, No 2), Moscow, 1971, pp 174-179 (from RZh-Kibernetika, No 6, Jun 72, Abstract No 6V430)

Translation: Let an enterprise produce a certain number of forms of a good. Shipments of the good to customers is planned by indicating a list of customers and the amount of good of each form shipped out to them for each day of the planned period. It is required to set up this chart in such a way that all orders are filled, every order is provided with the good produced, and certain additional requirements are satisfied. Formalization of the problem leads to solution in whole numbers $x_{\tau j}$ of the following system of linear inequalities $(\tau = 1, \ldots, T, \; j = 1, \ldots, n)$

$$\sum_{\tau=1}^{T} x_{\tau j} = K_j, \quad j = 1, \ldots, n, \qquad (1)$$

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USSR

PUKHOVA, G. V., Tr. 4-y Zimn. shkoly po mat. programmir. i smezh. voprosam, 1971, vyp. 2, Moscow, 1971, pp 174-179

$$\sum_{\tau=1}^{p}\sum_{j=1}^{n} a_{ij}K_{j}^{-1}x_{\tau j} \leqslant b_{i}^{oct} + (p-1)b_{i}, \quad p=1,\ldots,T;$$

$$i=1,\ldots,m,\tag{2}$$

$$\frac{1}{p}\sum_{\tau=1}^{p}\sum_{j=1}^{n} x_{\tau j} \leqslant \bar{K}, \quad p=1,\ldots,T,\tag{3}$$

$$\sum_{j=1}^{n} x_{\tau j} < K, \quad \tau=1,\ldots,T,\tag{4}$$

$$x_{\tau j} \geqslant 0 \quad (\text{and } x_{\tau j}=0 \text{ when } \tau > \tau_j).\tag{5}$$

For practical problems, the dimensionality of system (1)-(5) is fairly large (up to 2 000 variables and up to 2 500 equations and inequalities), which makes it very difficult to get an exact solution. A simple heuristic algorithm has been developed and proposed, based on practical experience. This algorithm takes advantage of two peculiarities of the problem: 1) goods are produced in sufficient quantity for all orders in the planned period (a month), 2) the number of customers is large, but the volumes of the orders

2/3

- 25 -

USSR

FUKHOVA, G. V., _Tr. 4-y Zimn. shkoly po mat. programmir. i smezh. voprosam_, _1971, vyp. 2_, Moscow, 1971, pp 174-179

are small as compared with the total output.

   The algorithm was numerically realized. Calculation of the schedule for a month on the "Minsk-22" computer took 20-30 minutes, Yu. Finkel'-shteyn.

3/3

USSR

UDC: 512.25/.26+519.3:330.115

PUKHOVA, G. V.

"On Solution of One Type of Problems in Linear Programming"

Translation: The following problem is considered: to find $\min F(x)$
under the conditions $Ax \leqslant b$, $c \leqslant x \leqslant d$, where $F(x)$ is a convex function,
$x \in R^n$, A is an $m \times n$ matrix of special type such that there are exactly
two non-zero elements in each line. From the introduction.

1/1

PUKHOVA, Ya. I.

INVESTIGATIONS OF THE ALLERGENIC PROPERTIES OF CHLORELLA

Abstract: This paper presents the results of a study of the immunobiological status of man long sustained by a bioregenerative life support system. It is not impossible that under the conditions of a direct gas exchange between algal and bacterial biocenoses and man allergization and autoallergic processes may develop and specific and non-specific resistivity of the human body may change. During the prolonged experiment it was shown that the functioning of the hypophysis-adrenal cortex system was accelerated and the level of humoral factors responsible for specific and nonspecific immunity was increased. The test subject exhibited no C-protein or autoantibodies to vital organs and tissues. Special tests conducted for determining sensitization gave evidence of human tolerance to Chlorella and its gaseous metabolites when in contact via direct gas exchange and regenerated water. These data give support to the idea advanced earlier that man and Chlorella, that is, two basic components of the life support system, are biologically compatible. In other words, they may coexist in a closed biological life support system.

In the presence of gas exchange between a culture of algae and man in a pressurized cabin special environmental conditions are created which are characterized by an increased content of carbon dioxide and other gaseous metabolites of man and the culture of algae, the presence of singular associations of microorganisms, etc. (L. V. Kirenskiy, et al.).

This study was undertaken for the purpose of investigating the immunological reactivity of man long confined to a biological life support system. The unusual nature of the studied problem is that immunological body reactivity is examined in the presence of a close contact and interaction between man

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USSR

UDC: 621.398

MIKHAYLOV, I. I., TUPAS, V. I., STULOV, V. A., SHCHERBAKOV, N. I.,
and TUMKOVICH, V. M. /Automation Institute/

"Frequency Selector Device"

Translation: A frequency selector device contains an oscillatory
circuit, a nonlinear frequency-dependent circuit, and a rectifier.
It differs in that, with the purpose of providing band pass sta-
bility and a constant output signal level, the nonlinear frequency-
dependent circuit is in the form of a series-connected differenti-
ating and integrating RC network, while the differentiating cir-
cuit is connected with autotransformer coupling to the input of
the oscillatory circuit, whose load is connected in series to the
load of the rectifier for the voltage picked up from the secondary
winding of the oscillatory circuit.

1/1

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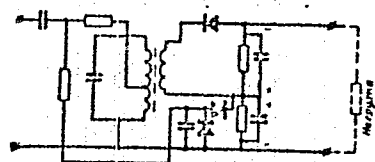
USSR   UDC: 621.396.662.4

MIKHAYLOV, I. I., TUPAS, V. I., STULOV, V. A., SHCHEDROV, N. I., PUKHOVICH,
V. M., Institute of Automation

"A Frequency-Selective Device"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki,
No 12, Apr 71, Author's Certificate No 299945, Division H, filed 8 Dec 69,
published 26 Mar 71, p 207

Translation: This Author's Certificate introduces a frequency-selective
device which contains a tank circuit, a nonlinear frequency-dependent circuit
and rectifiers. As a distinguishing feature of the patent, in order to
stabilize the passband and make the output signal level constant, the non-
linear frequency-dependent circuit is made in the form of a differentiating
RC network and an integrating RC network connected in series. The differen-
tiating network is connected by autotransformer coupling to the input of the
tank circuit, and the integrating network is connected to the input of a
rectifier whose load is connected in series with the load of the rectifier
for the voltage taken from the secondary winding of the tank circuit.

1/2

MIKHAILOV, I. I., USSR Author's Certificate No.

2/2

- 45 -

USSR   UDC 678.652'41'21-9

SHARKOVSKIY, V. A., AKUTIN, M. S., KERBER, M. L. SHCHEGLOV, L. L.,
MATVELASHVILI, G. A., PUKHOVITSKAYA, A. N., MILL, L. I., GREBENNIKOV,
A. V., OSTROVSKAYA, A. YE., and DYMARSKAYA, YE. L.

"New Types of Aminoplastics"

Moscow, Plasticheskiye Massy, No 12, Dec 70, pp 53-54

Abstract: The article describes synthesis of fiberglass plastics
based on carbamide binders.   These binders include a carbamide oli-
gomer modified by polyvinylacetate emulsion during synthesis, and
ures-benzoguanamine-formaldehyde oligomer. Fiberglass textolites
based on these oligomers and TS-8/3-250 glass treated with lubricant
752 are mechanically strong.   In addition to its excellent strength
properties, the plastic based on urea-benzoguanamine-formaldehyde
oligomer is also water-resistant.

1/1

1/2   024   UNCLASSIFIED   PROCESSING DATE--23OCT70
TLE--EFFECT OF MODIFYING UREA OLIGOMERS ON THE PROPERTIES OF GLASS FIBER
REINFORCED PLASTICS -U-
JTHOR-(05)-KRIVONOSOV, A.I., AKUTIN, M.S., KERBER, M.L., MESHCHERYAKOV,
YU.YA., PUKHOVITSKAYA, A.N.
JUNTRY OF INFO--USSR

JURCE--PLAST. MASSY 1970, (3), 46-7

ATE PUBLISHED-------70

JBJECT AREAS--CHEMISTRY, MATERIALS

PPIC TAGS--UREA, OLIGOMER, GLASS FIBER, REINFORCED PLASTIC, POLYVINYL
ACETATE/(U)UKS UREA OLIGOMER

ONTROL MARKING--NO RESTRICTIONS

DCUMENT CLASS--UNCLASSIFIED
ROXY REEL/FRAME--1997/0578   STEP NO--UR/0191/70/000/003/0046/0047

IRC ACCESSION NO--AP0119496
                    UNCLASSIFIED

IRC ACCESSION NO--AP0119496
BSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MODIFICATION OF A UREA OLIGOMER
UKS (I) WITH 3-5PERCENT AGM-9, ES, AND POLY(VINYL ACETATE) EMULSION
INCREASED THE WETTABILITY OF GLASS FIBERS WITH I AND IMPROVED
PHYSICOMECH. PROPERTIES OF GLASS FIBER REINFORCED PLASTICS.

UNCLASSIFIED

USSR

RIFERT, V. G., PUKHOVOY, I. I., and BELIK, D. M,

UDC 66.045.1

"On Intensifying Heat Exchange in Surface Evaporators of Sea Water"

Translation: A significant intensification of heat exchange in surface sea water
evaporators is attained by using corrugated and rotating heat exchange surfaces.
In this case it is possible to obtain a thin film of both the condensed warmed
vapor and the evaporating fluid, as a result of which the over all coefficient of
heat transfer is 5 - 10 times higher than that in evaporators with a submerged
heating surface.   Data on the condensation of steam on corrugated and rotating
surfaces are extremely limited and contradictory, and on the boiling of liquid
on such surfaces no data are available. The authors experiments in condensing
steam on a rotating disk 300 millimeters in diameter showed that the coefficient
of heat emission when steam condensed on a rotating surface was 3 - 5 times higher
than for a smooth stationary surface. Results are also given from the study of
heat transfer in the evaporation of water and a NaCl solution at a concentration
of $38 \cdot 10^3$ milligrams per litre as a function of the rate of disk rotation over
1/2

USSR

RIFERT, V. G., et al., Kiev, Referativnyy Zhurnal - Thermal Power, No 5, May 71, Abstract No 5S 183

the interval from 100 to 1900 rpm. The coefficients of heat emission obtained are on the order of $(15 - 25) \cdot 10^3$ watts per square meter degree, with the coefficient of heat transfer for the NaCl solution only $6 - 10\%$ lower than that for pure water. Two illustrations, seven bibliography entries.

USSR

BONDAR', G. G., PUKIN, B. YU., PERVUSHIN, YU. S.

UDC 621.81:539.4

"Study of the Fatigue Characteristics of the Strip and Wire Materials of Flexible Hoses"

Tr. Ufim. aviats. in-ta (Works of the Ufa Aviation Institute), 1971, vyp. 32, pp 121-126 (from RZh--Mekhanika, No 6, Jun 73, Abstract No 6V892)

Translation: A study was made of the fatigue strength of strip and wire materials of flexible metal hoses. Tests were run on specimens of Kh18N10T steel 150 × × 10 × 0.8 mm cut out along the generatrix from tubular billets of metal hoses. The tests on the specimens for cyclic bending were run on the DP-5/3 unit. The results of the tests were processes statically by the least squares method and represented in the form of a graph expressing the relation of the scale of the total deformation during bending of a plate to the number of cycles before rupture. It is pointed out that the presence of welds in a number of the structural designs of the metal hoses required additional investigation of the fatigue strength of the roll weld. The tests were performed on a lot of specimens numbering 30 by the procedure described above for flat specimens. The test results demonstrated the correctness of the preceding relations for the case of multiple bending of a specimen with a weld. The test results for the plates with preliminary ironing indicate that during repeated static deformation with

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USSR

BONDAR', G. G., Tr. Ufim. aviats. in-ta, 1971, vyp. 32, pp 121-126

given deformation amplitude ($\varepsilon = 1.6\%$), work hardening does not promote an increase in the cyclic strength of Kh18N10T steel.

The bending strength testing of wires used to manufacture braid were run by the adopted procedure in the maximum relative deformation range of $\varepsilon = 0.009$– 0.07. The test results are represented in the form of graphs from which it is obvious that the nature of the function $N = f(\varepsilon)$ has the same form as for plates. It is pointed out that the results obtained can be used when planning and designing metal and polyvinyl flouride hoses.

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USSR

VEKSLER, N. D., NIGUL, U. K., PUKK, R. A., Tallin

"On an Algorithm for Fourier Series Calculation of Echo Signals
From Elastic Spherical Objects in an Ideal Fluid"

Moscow, Mekhanika Tverdogo Tela, No 6, Nov/Dec 70, pp 71-83

Abstract: An algorithm based on expansion in a Fourier series is
proposed for calculating echo signals from elastic spherical ob-
jects.   Spherical objects of five types are considered: 1) a
hollow elastic sphere with a filler, 2) an empty hollow elastic
sphere, 3) a solid elastic sphere, 4) a spherical cavity filled
with some other fluid, and 5) an absolutely rigid sphere (the
last two are treated as limiting cases).   The solid and hollow
spheres are described by equations from the linear theory of
elasticity, and the medium and filler are treated as ideal com-
pressible liquids.   It is assumed that a source located in the
medium emits a centrally symmetric pulse.   The basis for the
mathematical model is the algorithm proposed by R. Hickling and

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USSR

VEKSLER, N. D., et al, <u>Mekhanika Tverdogo Tela</u>, No 6, Nov/Dec 70, pp 71-83

developed in articles published in the Journal of the Acoustic Society of America between 1962 and 1968 (from Vol 34, No 10 to Vol 44, No 3). This algorithm starts with construction of a stationary echo signal produced by an infinite sinusoidal transmission which is then treated as a spectral characteristic function and used in the case of a finite sinusoidal transmission for constructing the solution of the pulse problem by means of a Fourier integral. Modifications of this algorithm are proposed which improve the precision and efficiency of calculations aimed at finding governing principles which will make it possible to identify objects from echo signals.

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Glass and Ceramics

USSR

UDC 666.1:535.37

PUKO, R. A., PINAYEVA, M. M., KUZNETSOVA, V. V., KOZHAN, T. M., DEMIDOVICH, B. K., and KHOMENKO, V. S., Institute of Physics, Academy of Sciences, Belorussian SSR

"Luminescence of Terbium-Activated Glass"

Moscow, Neorganicheskiye Materialy, Vol 9, No 10, Oct 73, pp 1805-1808

Abstract: Results are presented from a study of the adsoption spectra and luminescence as well as the kinetics of luminescence of sodium-silicate glass with additions of Al_2O_3, CaO and MgO and activated with Tb^{+3} ions. Glass compositions were selected close to industrial glasses used in the technology of structural materials. The spectra in kinetics of silicate glass luminescence containing 15 wt % Na_2O and varying concentrations of Al_2O_3, CaO, and MgO with Tb^{+3} ions revealed differences associated with glass composition. The spectra of glasses containing Al_2O_3 have additional lines at 526 and 535 microns which are absent in the other glass spectra. There was observed a tendency of diminished luminescence damping time from the 5_{D_4} level according to the degree of increased CaO and MgO content.

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USSR

PUKO, R. A., et al., Neorganicheskiye Materialy, Vol 9, No 10, Oct 73, pp 1805-1808

The relaxation times were determined for luminescence levels $^5D_3$ and $^5D_4$ of the Tb^{+3} ion in the glasses and it was shown that the kinetics of $^5D_4$ level colonization in the case of nonresonant excitation determines the transitions from the $^5D_3$ level. Two figures, two tables, seven bibliographic references.

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SEVCHENKO, A. N., KUZNETSOVA, V. V., PUKO, R. A., KHOMENKO, V. S.,
RAZVINA, T. A., and KOZHAN, T. M.

"Intramolecular and Intermolecular Transfer of Excitation Energy
in Complex Compounds of Rare-Earth Metals"

Abstract: This paper gives the results of experiments for deter-
mining, through the kinetic method, the probability of intramole-
cular and intermolecular transfers of excitation energy in crys-
tals of rare-earth element (REE) complexes.   With excitation by
short light pulses, the kinetics of the luminescence reflects the
trend of the population and the deactivation of the luminescence
level and yields direct information concerning the probability of
these processes. A pulsed laser with molecular nitrogen was used
as the excitation source, with a pulse duration of $2 \cdot 10^{-8}$ sec and
a wavelength of 337.1 nm in the long-wave band of ligand absorp-
tion. The authors are connected with the Physics Institute of
the USSR Academy of Sciences.
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USSR

UDC: 681.327

ATOVM'YAN, A. E., KUDRYAVTSEV, O. M., LITVAN, A. B., MALOVICHKO, V. V.,
MUSATOV, I. F., FUKOV, N. P., YAROSHEVSKIY, I. D.

"A Multiple-Reel Tape Transport Mechanism for Memory Devices"

Translation: Multiple-reel tape transport mechanisms for memory units are
known which contain a reel casette, reel drive spindles, and a drive for
moving the casette. A distinguishing feature of the described device is
arrangement of the reels in the casette by pairs in two groups coaxially with
each other and with their drive spindles; and the casette contains a bracket
with guides for displacing the casette along the axis of the spindles, which
are equipped with releasable cartridges containing cams for locating the
reels with internal tapers. Fastened to the reels are spring-loaded gear
sectors which engage in the initial state with geared rims fastened on the
casette housing. This speeds up data sampling and improves the reliability
of the device. Two illustrations.
1/1

USSR

PULATOV, A. K.

"One Automatic Model of an Administrative Network"

Detsentralizovan. Metody upr. [Decentralized Control Methods -- Collection of Works], Moscow, 1972, pp 28-34 (Translated from Referativnyy Zhurnal, Kibernetika, No 3, Moscow, 1973, Abstract No 3 V724 by V. Mikheyev).

Translation: An attempt is made to formalize the description of a structure, the elements of which perform various control functions. A model is constructed of several automata, describing the behavior of elements of the structure, and the nature of distribution of levels of responsibility among positions in the control structure, which is hierarchical in nature, is studied. The finite set $A = \{A_1, A_2, \ldots, A_N\}$, the elements of which are called administrators, is studied. In set A, relationships R_1 and R_2 are fixed: R_1 is the relationship of direct subordination, which has the following properties: a) if $(A_i, A_j) \not\in R_1$, then $(A_j, A_i) \not\in R_1$, or antisymmetry; b) if $(A_i, A_j) \not\in R_1$ and $(A_j, A_k) \not\in R_1$, then $(A_i, A_k) \not\in R_1$, or antitransitiveness; c) if $(A_i, A_j) \not\in R_1$, then for all $k \neq j$, $k \neq i$ $(A_i, A_k) \not\in R_1$, uniqueness

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USSR

PULATOV, A. K., Detsentralizovan. Metody upr., Moscow, 1972, pp 28-34.

of subordination; d) there is a unique element A_k, such that for all $i \neq k$ $(A_i, A_j) \notin R_1$. If $(A_i, A_j) \in R_1$, it is said that A_j is directly subordinate to administrator A_i, while A_i is the direct leader of the administrator. R_2 is the ratio of cooperation. This is a symmetrical binary relationship, defined only for pairs of administrators A_i, A_j for which the leader is the same administrator. The administrative network is shown as a graph, the peaks of which are positions of administrators, while arcs of two types correspond to the relationships R_1 and R_2.

2/2

USSR

UDC 577.4

PULATOV, A. K.

"The Interaction of an Automaton with a Random Medium"

V sb. Vopr. Kibernetiki (Questions of Cybernetics - Collection of Works) No 59, Tashkent, 1973, pp 65 - 67 (from RZh Matematika No 12, 1973, abstract No 12 V460)

Translation: The interaction of an automaton with a random composite medium whose components are switched by the actions of the automaton is examined. It is shown that in such surroundings the automaton with optimal behavior is one which will achieve a sequence of actions with the minimum mathematical expectation of penalty.

Abstract by the author.

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USSR

PULATOV, A. K.

UDC 577.4

"Utilization of Automata with Variable Structure in a Queueing System Model"

No abstract

USSR

PULATOV, B. A., and AKHMEROVA, A. A., Uzbek Scientific Research Institute of Sanitation, Hygiene, and Professional Diseases

"Toxicity of a new Pesticide -- Kilwal [Vamidalthione]"

Tashkent, Meditsinskiy Zhurnal Uzbekistana, No 8, Aug 72, pp 65-68

Abstract: The paper reports toxicological and morphological evaluation of Kilwal -- 0,0-dimethyl-S-2-(1-N-methylcarbamoylethylmercapto)-ethyl thiophosphate. The LD_{50} for white mice was found to be 40 mg/kg of body weight and for white rats -- 103 mg/kg BW. Repeated administration of Kilwal at a 1/10 LD_{50} dose results in clinical symptoms of chronic intoxication, pathomorphological and histological changes in the internal organs characterized by disturbance in hemodynamics, appearance of dystrophic and inflammatory phenomena, and occasionally by necrobiotic and necrotic processes. Continuous daily administration of this pesticide at a 1/200 and 1/400 LD_{50} dose for 12 months did not lead to death of any animals nor to any symptoms of intoxication. However, the internal organs showed weak reversible pathological changes.

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USSR

PULATOV, I., MIRZAYEVA, D. T.

UDC: 681.3.06:51

"Information Exchange Between Two 'M-20' Computers"

V sb. Vopr. kibernetiki (Problems of Cybernetics--collection of works), vyp. 43, Tashkent, 1971, pp 121-131 (from RZh-Matematika, No 11, Nov 71, Abstract No 11V842)

Translation: A system is proposed which provides group exchange of information between two "M-20" computers. The use of such a system in problem solving gives simultaneous access to the memories of both computers. Three methods are considered for data transfer from core store I to core store II and back: 1) series, 2) parallel-series, and 3) parallel. Codes are transmitted in all three cases from an R I transmitting machine. Detailed instructions are given on realization of the system with the necessary explanations. Two methods of synchronization are proposed for simultaneous operation of the two computers: command synchronization and sub-programming. The proposed system can provide an appreciable increase in speed when solving problems for which the core store volume of a single computer is inadequate. A. Khalamayzer.

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USSR

PULATOV, I., MIRZAYEVA, D. T.

UDC: 681.3.06:51

"Information Exchange Between Two 'M-20' Computers"

V sb. Vopr. kibernetiki (Problems of Cybernetics—collection of works), vyp. 43, Tashkent, 1971, pp 121-131 (from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V842)

Translation: A system is proposed which provides for group exchange of information between two M-20 computers. In solving problems with the use of such a system, the memory of both computers is simultaneously accessible. Three methods are considered for data transmission from the core store of computer I to that of computer II and back: 1) series; 2) series-parallel; 3) parallel. In all three cases, codes are transmitted from RI of the transmitting computer. Detailed instructions are given on realization of the system with necessary explanations. Two methods of synchronoization are proposed for implementing joint operation of the two computers: command synchronization and subprogramming.synchronization. The proposed system can increase speed appreciably in solving problems for which the core store volume of a single computer is insufficient. A. Khalamayzer.

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USSR

PULATOV, I. R., SOLOGUB, G. R., and RIZAYEVA, F. N., Uzbekistan Scientific
Studies Institute of Vaccines and Serums

"Self-Immunization Processes for Animals for the Introduction of Venom From
the Middle Asian Viper (Vipera lebetina turanica)"

Tashkent, Meditsinskiy Zhurnal Uzbekistana, Jul 73, pp 50-51

Abstract: An injection of snake venom, or tissue from another animal that
had previously been injected with the venum, into an organism may be used to
stimulate the formation of antibodies against the serum. Experiments on
white mice have shown that antibodies are developed in response to treatment
with liver and spleen at different times after the injection of the venom.
Antibodies were separated by precipitation of the antibody-antigen complex
with (NH4)2SO4, 4, 10, and 15 days after the injection. With the antigens
from normal spleen (titre of 1:11 and 1:16), antibodies were observed in
36.6% of the cases after 4 days and in 100% of the cases after 10 days.
Thus for a single injection of snake venom an animal is able to respond
with a specific self-immuniological reaction which develops in the presence
of antibodies in the blood serum and which is corroborated by a cytological
reaction.
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USSR

PULATOV, I. R., DANILOVA, R. I., ROZGON, M. I., and RIZAYEVA, F. N., Tashkent
Scientific Research Institute of Vaccines, and Sera, Tashkent

"Comparative Characterization of Immunomorphological   Reactions upon
Experimental Administration of the Venom of the Central Asian Blunt-Nosed
Viper"

Abstract: Changes in the immunomorphological reactions of mice upon
intravenous injection of the venom of the Central-Asian blunt-nosed viper
(in a dose of LD_{50}) were investigated. In response to the venom, formation
of antibodies to the liver took place. Profound progressive dystrophy of
the liver and spleen developed. Hemodynamic shifts were also observed.
The content of nucleic acids and of glycogen in the liver decreased.
Immunization of the poisoned animals by intravenous injection of ovine
erythrocytes on the second day after administration of the venom increased
the amount of antibody-forming cells in the spleen. The formation of
plasmatic cells in the spleen and immunogenesis were inhibited by the
venom.

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1/2   006

TITLE--HYDROLYSIS OF MOLYBDENUM PENTACHLORIDE -U-

UNCLASSIFIED

PROCESSING DATE--04DEC70

AUTHOR-(03)-GLUKHOV, I.A., YELISEYEV, S.S., PULATOV, M.S.

COUNTRY OF INFO--USSR

SOURCE--ZH. NEORG. KHIM. 1970, 15(5), 1425-6

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--HYDROLYSIS, MOLYBDENUM CHLORIDE, CARBON TETRACHLORIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/0316

CIRC ACCESSION NO--AP0134120

STEP NO--UR/0078/70/015/005/1425/1426

UNCLASSIFIED

2/2   008

CIRC ACCESSION NO--AP0134120   UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   HYDROLYSIS OF MOCL SUB5 WAS   PROCESSING DATE--04DEC70

STUDIED IN CCL SUB4 WITH CARFULLY CONTROLLED H SUB2 O VAPOR SUPPLY.

MOOCL SUB3, INSOL. IN CCL SUB4 PPTD. DURING THE HYDROLYSIS.

UNCLASSIFIED

1/2   008

UNCLASSIFIED

TITLE--REACTIONS IN THE TUNGSTEN TRIOXIDE,MOLYBDENUM TRIOXIDE,SULFUR
MONOCHLORIDE,SULFUR DICHLORIDE,SYSTEMS -U-

PROCESSING DATE--04DEC70

AUTHOR-(03)-GLUKHOV, I.A., YELISEYEV, S.S., PULATOV, M.S.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK TADZH. SSR, OTD. FIZ.-MAT. GEOL.-KHIM. NAUK 1970,
(1), 29-32

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--SULFUR CHLORIDE, MOLYBDENUM OXIDE, TUNGSTEN OXIDE, CHEMICAL
REACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/1228

STEP NO--UR/0465/70/000/001/0029/0032

CIRC ACCESSION NO--AP0136639

UNCLASSIFIED

CIRC ACCESSION NO--AP0136639   UNCLASSIFIED   PROCESSING DATE--04DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE SYSTEM MoO_3-SCl_2, MoO_2Cl_2 AND $MoOCl_4$ ARE FORMED GRADUALLY, THE FINAL PRODUCT BEING $MoCl_5$. IN THE SYSTEM MoO_3-S_2Cl_2, THE INTERMEDIATE COMPDS. ARE MoO_2Cl_2 AND $MoOCl_4$ AND THE FINAL PRODUCT IS $MoOCl_3$. THE FINAL PRODUCT IN THE SYSTEM WO_3-SCl_2 IS WCl_6; THE INTERMEDIATE COMPDS. ARE WO_2Cl_2 AND $WOCl_4$. WO_3 AND $WOCl_4$ DO NOT REACT WITH S_2Cl_2. THE EXPTS. WERE CARRIED OUT IN SEALED AMPULS AT 160-80DEGREES.   FACILITY: INST. KHIM., DUSHANBE, USSR.

UNCLASSIFIED

USSR

PULATOV, R., Chief Specialist, Learned Medical Council, Uzbek SSR Ministry
of Health

"Green Light for Innovations"

Moscow, Meditsinskaya Gazeta, 17 Nov 72, p 3

Translation: The results and prospects of creating and introducing new medi-
cines into health practice were discussed at a plenum of the board of directors
of the All-Union Scientific Society of Pharmacologists in Tashkent. More than
200 pharmacologists, clinical doctors, chemists, production engineers, and
pharmacists took part in the work of the plenum.

Academician of the Academy of Medical Sciences USSR, V. Zakusov presented a
program report on directed synthesis of new active pharmacological substances
with assigned properties. New drugs with primarily neuroleptic, psychotropic,
antiarhythmic, immunodepressant, antitumor, antianemic, ganglioplegic, and
curareiform properties were the subjects of the presentations by corresponding
members of the AMN SSSR [Academy of Medical Sciences USSR] M. Mashkovskiy and
D. Kharkevich (Moscow), corresponding members of the Academy of Sciences USSR
A. Sadykov and S. Yunusov, professors U. Aripov, M. Azizov, I. Kamilov
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USSR

PULATOV, R., Meditsinskaya Gazeta, 17 Nov 72, p 3

(Tashkent), N. Khromov-Borisov (Leningrad), S. Vartanyan (Yerevan), and others.

Professor G. Avrutskiy (Moscow) gave a detailed elucidation of pressing problems of clinical psychopharmacology. Accumulated experience in studying the clinical effect of various classes and groups of modern psychotropic agents makes it possible to predict changes in the clinical manifestations of psychoses with sufficient precision. For example, it is possible to purposefully counteract excitation using aliphatic phenothiazines and chlorprotoxen, to reduce delirium and hallucination with piperazine phenothiazines and butyrophenones, to decrease alarm, fears, and compulsion of neurotic origin with tranquilizers of the benzodiazipin series, and to combat inhibition using syndocarb and indacet. However, cases of patient resistance to psychopharmacotherapy are still frequent. Therefore, at the clinics they are seeking ways to reduce the phenomenon of adaptation to drugs, but this does not eliminate the task of creating even more powerful therapeutic agents with strong general and selective antipsychotropic effects.

An interesting report was given by G. Pershin (Moscow), corresponding member of the AMN SSSR, concerning the problems and principles of work by the

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PULATOV, R., Meditsinskaya Gazeta, 17 Nov 72, p 3

Pharmacological Committee of the USSR Ministry of Health. Professor L.
Grechishkin of Leningrad told about the rapid, consistent procedure for in-
troducing into practice new drugs created by the Institute of Experimental
Medicine AMN SSSR. This procedure is divided into phases figured for 3-3.5
years. The first phase is expanding pharmacological testing and checking for
harmfulness, the second is clinical testing, and the third is industrial
assimilation and introduction into extensive medical practice. The insti-
tute assumes responsibility for all phases of introduction and considers its
work finished only when industrial production produces enough drugs to fully
satisfy health needs year after year.

In the talks, particular attention was devoted to the mass media and selling
original drugs and licenses for producing them in other countries.

A. Natradze, chief of the Main Administration for Production of Synthetic
Medicinal Agents of the Ministry of the Medical Industry, gave a detailed
report on the five-year plan for assimilating new medicines.
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USSR

PULATOV, R., Meditsinskaya Gazeta, 17 Nov 72, p 3

The plenum concluded with a seminar devoted to methodological questions of seeking, selecting, and testing new pharmacologically active neurotropic and cardiovascular agents.

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USSR

ZAIROV, K. S., SEMIOTROCHEV, V. L., CHICHENIN, P. I., MUKHAMEDOV, S. M.,
PULATOV, Ya. G., and LI GVAN KHVA, V. T., Central Asian Scientific Research
Antiplague Institute Ministry of Health Uzbek SSR and Uzbek Antiplague
Station

"Some Problems of the Spread of El Tor Cholera and Its Prophylactic Measures"

Abstract: Mild cholera cases and, especially, cholera carriers are not always
detected or reported. This is especially true for El Tor cholera, which breaks
out in alternating waves, first epidemic, then sporadic. It takes a relatively
milder course and is less lethal than ordinary cholera, sometimes resembling
a gastrointestinal upset. El Tor vibrios found in water sources in certain
areas are lysogenic, in others not. Members of the family and neighborhood of
those suffering the disease, particularly preschool children, are often car-
riers, for a period of about four days after contact. Certain important
measures dealing with the sources of infection are suggested: 1) compulsory
bacteriological examination of persons arriving from Asian countries 2)
Epidemiological examination for cholera for all those suffering gastro-in-
testinal disturbances 3) development and application of effective methods
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USSR

ZAIROV, K. S., et al., Meditsinskiy Zhurnal Uzbekistana, No 2, 1972   pp 10-14

for curing all forms of cholera 4) setting up various types of installations, ensuring strict sanitary inspection, especially in areas of mass passenger travel.

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Epidemiology

USSR

ZAIROV, K. S., CHICHENIN, P. I., MUKHAMEDOV, S. M., PULATOV, YA. G., LI-GVAN-
KHVA, INZHEVATOVA, M. V., ARTYKOV, K. A., and SEREDIN, V. G.

"Methods and Tactics to be Applied in Detecting Local Foci of Cholera"

Abstract: With the appearance of the El Tor variety of cholera, endemic
foci of this disease developed in a number of countries in which classical
cholera could not take root. The reason for this is the capacity of El Tor
vibrios to survive for prolonged periods of time in the human organism and
the environment. Local cholera foci came developed in which the circulation
of the agent is sustained by a chain of atypical diseases, prolonged carrier
state of the vibrios in humans, and possibly transmission of the infection
by aquatic organisms. Discovery of the carrier state among persons with
diseases of the bile secretion system led A. G. Nikonov (1960) to the conclu-
sion that cholera vibrios may be retained for a long time in the gall bladder.
He proved the correctness of this conclusion experimentally. During the
recent cholera pandemic, vibrios were detected more frequently in the gall
bladder. In cases of El Tor cholera, which is caused by hemolytic varieties
of the microorganism, it is advisable to determine the titer of antibodies
with reference to the hemolytic enzyme found in the supernatant liquid of
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USSR

ZAIROV, K. S., et al., Meditsinskiy Zhurnal Uzbekistana, No 12, Dec 71, pp 3-7

of meat broth cultures. The complement fixation reaction, which has been
used as an immunological test for cholera in Russia since 1909, has been
forgotten for inadequate reasons. The very small amount of cholera vibrios
present in the stool of cholera patients and vibrio carriers can be detected
by means of suspended antibodies, among which alizarin, indanthrone, and
anthragallo antibodies are used most frequently. Concentration of cholera
vibrios on membrane filters follows by supplementary cultivation (Ye. V.
Chibrikova, 1960, 1962) made it possible to increase greatly the sensitivity
of the immunofluorescence method of detection. A. K. Adamov et al (1969)
isolated El Tro vibrios from fish caught in rivers of Turkmenia. According
to results obtained by the authors of this article, cholera vibrios may be
detected in the intestine of fish even when tests on the water in which the
fish have been caught are negative. Testing of fish is therefore recommended
as a method for the detection of latent foci of cholera in bodies of water.

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USSR   UDC 911.3:616.927(575.1)

NEVSKIY, M. V., YUSUPOV, K. Yu., AMINADZE, Z. M., KAPLUNOVA, M. S., and
PULATOV, Ya. G.

"Morbidity Dynamics of Typhoid and Paratyphoid Fever in the Uzbek SSR"

Nauchn. tr. uchenykh i prakt. vrachey Uzbekistana (Scientific Works of
Research and Practicing Physicians in Uzbekistan) 1970, sb. 6, pp 16-20
(from RZh-Meditsinskaya Geografiya, No 4, Abstract No 4.36.203)

Translation: During the years 1958-1965, the Uzbek SSR registered a decrease
in the number of cases of all typhoid and paratyphoid by a factor of 2.4;
typhoid by a factor of three, while the number of paratyphoid fever cases
remained unchanged. In cities the number of typhoid-paratyphoid cases de-
creased three-fold; in rural areas -- two-fold. In 1958 45.7% of the
patients in rural areas had typhoid-paratyphoid and in 1965 -- 54.6%.
In the total paratyphoid picture for the past three years, the prevailing
form was paratyphoid B, responsible for a 79% morbidity.

1/1

USSR

CHICHENIN, P. I., ADILOV, D. A., YUSUPOV, K. Yu., SHARIPOV, M. K., PULATOV, Ya. G., LI GVAN KHVA, V. T., AGZHANOV, N. A., and DZHURAYEV, Kh. D., Uzbek Scientific Research Institute of Epidemiology, Microbiology, and Infectious Diseases

"Epidemiological Characteristics of Anthrax in Uzbekistan During Recent Years"

Tashkent, Meditsinskiy Zhurnal Uzbekistana, No 1, Jan 73, pp 15-19

Abstract: In 1949-60 the incidence of anthrax affecting human beings decreased by a factor of three in the Uzbek SSR from that in 1925-48, mainly as a result of immunization of occupationally exposed persons. In recent years the over-all incidence of anthrax among both humans and animals in the Uzbek SSR was reduced by effective prophylactic measures. However, there is no room for complacency, in view of the fact that there was in 1949-60 and especially in 1961-70 an increase in the relative weight of group infections connected with the uncontrolled utilization of meat and of other animal products after obligatory slaughter of diseased farm animals, particularly in the private sector. During the period under consideration, the frequency of anthrax in the Uzbek SSR exceeded that in the USSR by a factor of 3-4, with the number of cases in the Uzbek SSR comprising 10-16% of that in the entire USSR. On the basis of data covering the
1/2

USSR

CHICHENIN, P. I., Meditsinskiy Zhurnal Uzbekistana, No 1, Jan 73, pp 15-19

Incidence of anthrax in the past 20 yrs, one can differentiate between three zones in the Uzbek SSR: I) A zone of stable incidence among humans and animals (Tashkentskaya, Surkhandar'inskaya, and Samarkandskaya Oblasts); II) A zone with periodic outbreaks (Andizhanskaya, Khorzemskaya, and Kashkadar'inskaya Oblasts and the KKASSR); III) The zone with the most satisfactory conditions (Bukharskaya, Syrdar'inskaya, Namanganskaya, and Ferganskaya Oblasts). The ratio of cases of human anthrax to those in the entire Uzbek SSR was 62.33, 35.25, and 2.42% in zone I, II, and III, respectively, and that of anthrax of animals 67.13, 32.02, and 0.85% in zone I, II, and III, respectively. In view of the fact that the infection remains in the soil, prophylactic measures in locations at which anthrax has occured must be carried out constantly regardless of the time that has elapsed since the last outbreak and these measures reinforced at times at which digging into the ground takes place, e.g., in connection with agricultural irrigation.

2/2

PULATOV Ya G

Acc. Nr: AP0043938

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SOME PROBLEMS OF EPIDEMIOLOGY OF BRUCELLOSIS IN UZBEKISTAN

Dzhalilov, K. D.; Dzhurayev, N. D.; Musabayev, I. K.,
Yusupov, K. Yu.; Pulatov, Ya. G.

As a result of analysis of the incidence of brucellosis and of individual problems of
epidemiology and epizootology concerning brucellosis in Uzbekistan in 1955—1966. It was
established that the index of brucellosis affection of farm animals was unequally distributed
in the republic: in 1962—1966 83.7% of the affected animals were found in Samarkand, Bu-
khara, Kashkadarya, and Tashkent regions, and also Karakalpak ASSR and Tashkent city,
only 11.3% being revealed in Surkhandarya, Khoresm, Fergana and Syrdarya regions.
A spring-summer seasonal prevalence was noted (80%). It was shown that brucellosis
infection of human beings occurs mainly by alimentary route, cattle serving as the source
of infection.

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USSR

UDC: 911.3.616.927(575.1)

CHICHENIN, P. I., PULATOV, Ya. G., YUSUPOV, K. Yu., LI GVANKHVA, V. T., BADANOVA,
L. A., KOVALEVA, F. S.

"The Prevalence of Typhoid-Paratyphoid Infections and the Means for Eradicating
them in the Uzbek SSR"

V sb. Materialy XV Vses. s'ezda epidemiologov, mikrobiologov i infektsionistov,
Tezisy dokl. Ch. I (Proceedings of the 15th All Union Conference of Epidemiolo-
gists, Microbiologists and Specialists in Infectious Diseases, Reports of Theses,
Part I—collection of works) Moscow, 1970, pp 279 (from RZh-36. Meditsinskaya
geografiya, No 1, Jan 71, Abstract No 1.36.250)

/No Abstract/

1/1

- 53 -

USSR   UDC: 616.981.42-036.22(575

DZHALILOV, K.D., DZHURAYEV, N.D., MUSABAYEV, I.K., YUSUPOV, K.YU., and PULATOV,
YA.G., Uzbek Institute of Epidemiology, Microbiology, and Infectious Diseases,
and Uzbek Republic Sanitary Epidemiological Station and Infectious Diseases,

"Aspects of the Epidemiology of Brucellosis in Uzbekistan"

Abstract: Although the incidence of brucellosis has declined sharply in
recent years in the Soviet Union as a whole, it remains high in the Central
Asian republics, particularly Uzbekistan, mainly because cattle and sheep
raising is widespread in both the public and private sectors. From 1962-1966
cattle were the source of the disease in man in 60.6% of the cases, sheep
and goats in 32.5%, and other animals in 6.9%. The main routes of infection
were alimentary (30.9%), contact (16.2%), and combined alimentary-contact
(9.9%). The peak of the disease occurred during the spring and summer,
when contacts of people with animals (lambing, shearing of wool) were most
frequent, and consumption of dairy and milk products highest. Farms affected
with the disease in 1966 were in Kashkadar'ya oblast (15.8%), Samarkand (14.2%),
Tashkent oblast (12.3%), Karakalpak ASSR (12%), Surkhandar'ya (11.4%), Andizhan
(10.7%) and Fergan (8.7%) oblasts. Among humans, more cases of chronic bru-
cellosis than acute forms of the disease are reported every year.
1/1

USSR

SUD'BINA, Ye. N., PULATOVA, M. K., and KAYUSHIN, L. P., Institute of
Biological Physics, Academy of Sciences USSR, Pushchino

"Electron Spin Resonance Investigation of the Nature and Properties of
Paramagnetic Centers in Gamma-Irradiated Proteins"

Moscow, Biofizika, Vol 16, Vyp 4, Jul/Aug 71, pp 596-602

Abstract: Polycrystalline proteins -- serum albumin, egg albumin, lysozyme,
pepsin, and trypsin -- and silk fibroin were irradiated with 10 Mrad of Co^{60}
gamma rays at $-196^\circ C$. Electron spin resonance investigations revealed forma-
tion of the following paramagnetic centers: trapped electrons, anion radicals
with unpaired electrons located at the S-S bonds, in aliphatic amino acid
residues with unpaired electrons, and at the alpha carbon atoms of peptide
chains from which hydrogen atoms are detached. After irradiation at room
temperature, paramagnetic centers are formed on H-binding oxygen atoms with
unpaired electrons and on RS groups.

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TITLE--THE NATURE OF PARAMAGNETIC CENTERS AND THEIR PHOTOCHEMICAL
   TRANSITIONS IN MONOCRYSTAL OF HYDROCHLORIDE L TYROSINE AT 77DEGREESK
AUTHOR-(03)-PASOYAN, V.G., PULATOVA, M.K., KAYUSHIN, L.P.

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